

File: North U Drive
RI/FS

MEL CARNAHAN
Governor



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102

Martello

DAVID A. SHORR
Director

February 17, 1993

Mr. David V. Crawford
Remedial Project Manager
Superfund Branch
U.S. Environmental Protection
Agency, Region VII
726 Minnesota Avenue
Kansas City, KS 66101

Dear Mr. Crawford:

Enclosed is the first revision of the draft Proposed Plan for the North U Drive site. All of your comments, which we received yesterday, have been incorporated. We have made a few changes as well.

Please look this over to see if your comments have been satisfactorily incorporated, and to see if you agree with the other changes we have made.

Your input in this endeavor is greatly appreciated. Please relay additional comments by telephone or facsimile to expedite the process. Please contact me if you have any questions at (314) 751-3176.

Sincerely,

HAZARDOUS WASTE PROGRAM

A handwritten signature in dark ink, appearing to read "Steven W. Sturgess".

Steven W. Sturgess
Environmental Specialist

SWS:bt

Enclosure

✓c: Ms. Eileen Martello, CNSL (with enclosure)

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PROPOSED PLAN

NORTH U DRIVE WELL CONTAMINATION SITE

SPRINGFIELD, MISSOURI

Prepared by:

Missouri Department of Natural Resources (MDNR)

and

United States Environmental Protection Agency (EPA)

Region VII

February 1993

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PROPOSED PLAN
NORTH U DRIVE WELL CONTAMINATION SITE

DECISION SUMMARY

SECTION 1, INTRODUCTION

The Missouri Department of Natural Resources (MDNR), as the lead agency for site activities, in association with the U.S. Environmental Protection Agency (EPA), the support agency, is hereby presenting this Proposed Plan for the North U Drive Well Contamination site in Springfield, Missouri.

Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. 9617, requires that a notice and brief analysis of a Proposed Plan be published and that the Proposed Plan be made available to the public.

At this time, MDNR and EPA are releasing the Proposed Plan, as well as the Remedial Investigation (RI) Report, Risk Assessment, and Administrative Record. These documents will be available for public review during normal business hours in the Docket Room at EPA's Region VII Office (726 Minnesota Avenue) in Kansas City, Kansas, at MDNR's Hazardous Waste Program File Room (205 Jefferson Street) in Jefferson City, Missouri, and at the Kearney Street Branch Library (630 West Kearney) in Springfield, Missouri.

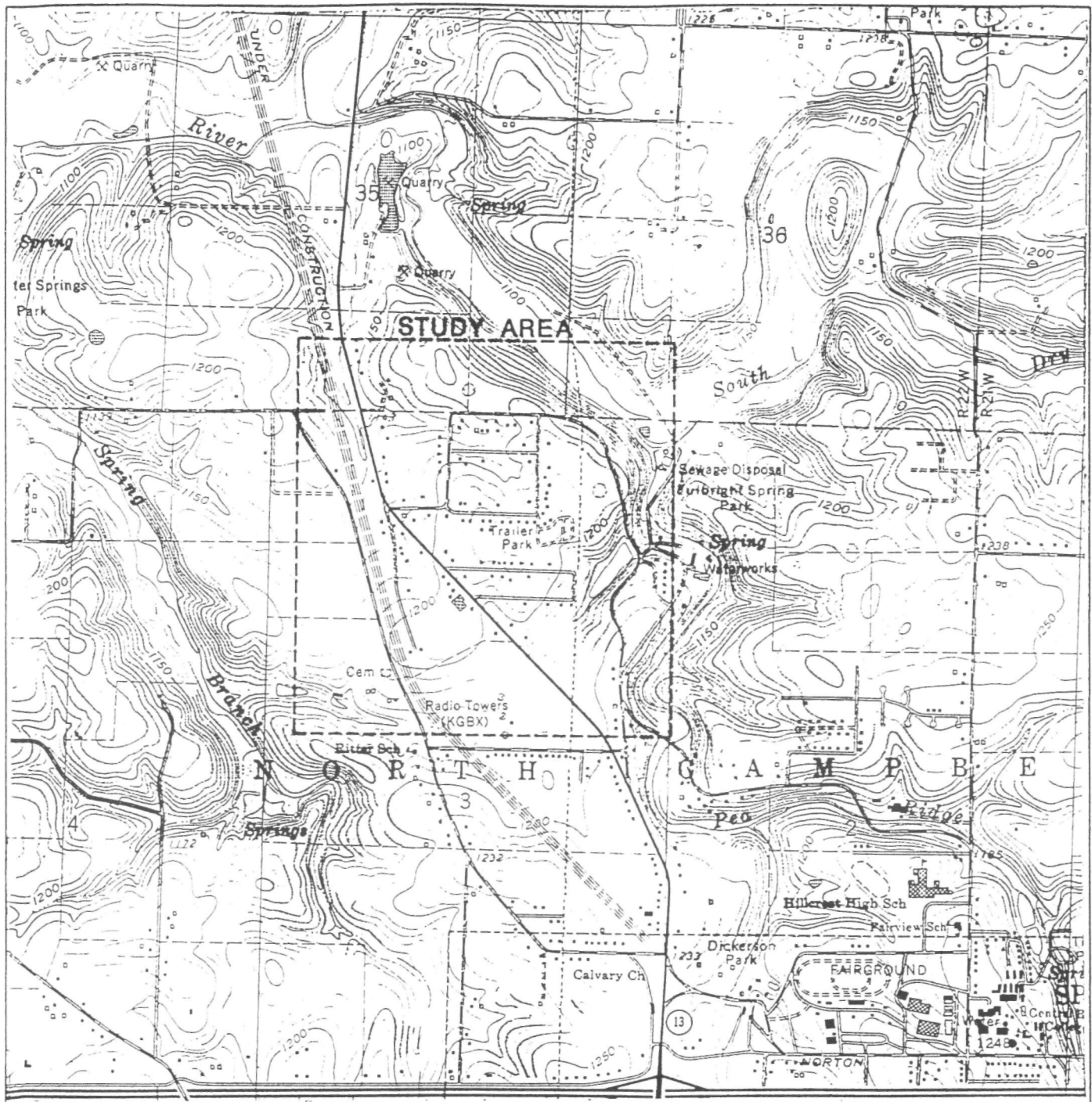
Members of the public are encouraged to review and comment on the detailed information presented in the Administrative Record file, which includes all documents and site information on which the selection of the proposed remedy and rationale are based.

SECTION 2, SITE BACKGROUND

2.1 Site Location

The North U Drive Well Contamination site is located approximately 1.25 miles north of Springfield, Greene County, Missouri (Figure Number 1). The site is bounded on the north by North Stage Coach Road, on the east by Pea Ridge Creek, on the west by New Missouri Highway 13, and the south by the south property line of the Montgomery Metal Craft facility (Figure Number 2). The site and its surroundings consist of a rural/residential neighborhood, woodlands, and manufacturing and commercial businesses. The topography consists of low hills and some sinkholes. The area is in a karst setting. Karst refers to solution features such as caves, sinkholes, and springs. Approximately 200-300 people live in the area of groundwater contamination. The former Fulbright Landfill, also a Superfund site, is located less than 1/4 mile north of the site. The Fulbright Pump Station and Municipal Water Plant is located less than 1/4 mile east of the site.

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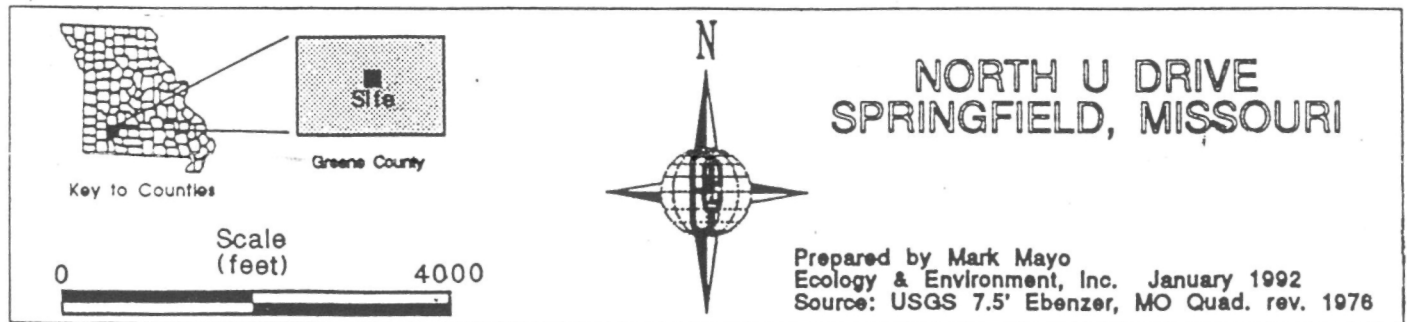


Figure 1 - Location of North U Drive Well Contamination Site

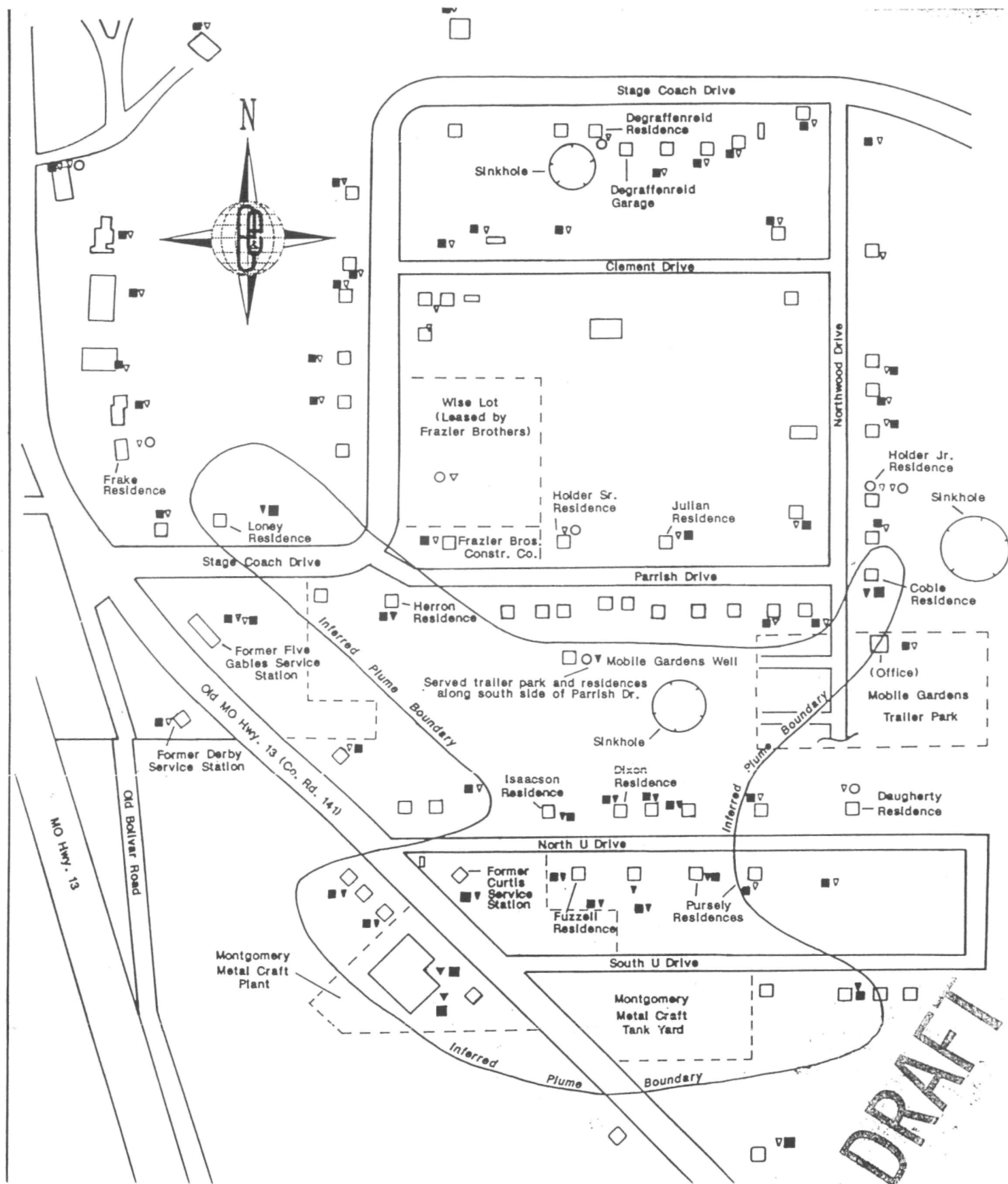


Figure 2 - Site features, North U Drive Well Contamination site

2.2 Site History

The North U Drive Well Contamination site was first identified as a potentially hazardous waste site in October 1983, when citizens complained of a chemical taste and odor in their drinking water. Complaining residents, all of whom used private drinking water wells, consistently described a petroleum or gasoline-type odor in their wells. Twelve wells were found to be contaminated. One of the wells contained 470 ug/l benzene, which exceeds EPA's Suggested No Adverse Response Level (SNARL) ten day limit of 350 ug/l.

Sampling by MDNR identified benzene, toluene, ethylbenzene, xylene, and methyl tertiary butyl ether (MTBE) as the primary contaminants in the groundwater. These compounds are constituents of gasoline. MTBE is exclusively used as an additive in gasoline, and was not commercially available until 1979. Therefore, MTBE contamination is indicative of contaminant release since 1979.

Water lines were installed in 1985 to provide Springfield city water to all affected residents. In addition, 62 wells were plugged to control the spread of contamination and to prevent residents from drinking contaminated water. These activities were conducted by the EPA Removal Program. A separate, unrelated removal of PCB capacitors and PCB contaminated soil occurred at the former Curtis Service Station in September 1985.

The source of contamination was not known at the time the site was listed on the National Priorities List (NPL) in June 1986. The release appeared to have originated in the vicinity of the Montgomery Metal Craft Plant. This finding was based on the configuration of the plume and the inferred direction of groundwater flow. The fact that the contaminants are petroleum-related is also consistent with operations at the Montgomery Metal Craft Facility. Montgomery Metal Craft has, as part of its operation, handled, stored, and cleaned used underground petroleum storage tanks. They also have had as many as three underground storage tanks in use on their property. An automobile service station (former Curtis Service Station) operated immediately northeast of the Montgomery Metal Craft property until 1960. The large amount of time since the service station closed, together with the presence of MTBE (not available until 1979), made the former Curtis Service Station an unlikely source.

SECTION 3, COMMUNITY PARTICIPATION

The EPA and MDNR conduct community relations to ensure that the public has input into decisions about Superfund actions and is kept informed about the progress of those actions.

As lead agency, MDNR has been responsible for community relations for the North U Drive Well Contamination site. Prior to initiation of the RI, MDNR developed a Community Relations Plan. The document lists contacts and interested parties throughout government and the local community. It also identifies community relations activities which were conducted during the RI. Several fact sheets were issued during the RI to apprise the community of significant developments

or of the status of work at the site. On October 2, 1991, an availability session was held to answer questions from the public and to solicit information from any citizen who may have information on the release of contaminants at the site. This event was advertised in the Springfield News-Leader, and was covered by the local print and television media.

3.1 Thirty Day Public Comment Period

In order to provide the community with an opportunity to submit written and/or oral comments on the Proposed Plan, RI Report, Risk Assessment, and Administrative Record, MDNR and EPA have established a thirty day public review and comment period which opened on February 25, 1993 and will close on March 26, 1993.

Within this comment period, a public meeting near the site will be held on March 9, 1993 at 7 p.m. at the Northview Multi-Purpose Center, 2600 North Robberson, Springfield, Missouri. At the meeting, MDNR and EPA will present the Proposed Plan, provide information about the RI, answer questions, and receive other oral and written comments.

Comments will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision (ROD). The ROD is the document that presents the final selection for the cleanup. The final remedy selection will be made only after MDNR and EPA have taken into consideration the public's comments and any new significant information that may be presented during this comment period. The public may submit written comments or obtain additional information from:

Steven W. Sturgess, Project Manager
Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102
(314) 751-3176

SECTION 4, SCOPE OF RESPONSE ACTIONS

The Proposed Plan applies to the entire North U Drive Well Contamination site, including all affected media (surface and groundwater, soil, bedrock, and air).

As stated previously, available data and information indicate that the original contamination at the site apparently was related to a release of gasoline. Therefore, Superfund's response activities are precluded because of the lack of jurisdiction under the petroleum exclusion. Additionally, as will be presented in Section 4.2, risks posed by all manmade contaminants, including petroleum contaminants, do not warrant a cleanup.

Elevated concentrations of metals in some wells, recognized during the Remedial Investigation, is considered a natural phenomenon resulting from natural metals in soils at the site. As such, the metals are excluded from action under CERCLA.

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Very low concentrations of a few organic contaminants which do not appear petroleum-related were found in soils and groundwater. None of these contaminants are present in sufficient concentrations to pose a significant threat to human health or the environment. Also, they are not widespread, but generally are found only in isolated samples. Non-petroleum-related contaminants are probably a result of small-scale spills, leaks, or other minor releases.

SECTION 5, SITE CHARACTERISTICS

The Remedial Investigation at the site identified three main types of contaminants:

- * Petroleum-related contaminants, primarily benzene, toluene, ethylbenzene, and xylene (BTEX). BTEX compounds are constituents of, or additives to, gasoline. These compounds were detected in both groundwater and soils during the RI, except for ethylbenzene, which was not detected in groundwater. Other minor petroleum-related contaminants were detected in trace quantities. MTBE was not detected during the RI.
- * Metals. Several metals were detected in significant quantities in total metals analyses of groundwater. Generally, these same metals were either not detected, or were present only in trace amounts, in dissolved metals analyses. In soil samples, the same suite of metals were also detected. However, most were within the range of concentrations naturally found in Greene County soils.
- * Non-petroleum-related organic contaminants. In general, these compounds were detected at or near the limit of laboratory detection or in trace quantities in both groundwater and soil samples. None pose a significant threat to human health or the environment.

Contaminant concentrations in the groundwater changed significantly between the time of initial site activities and the time of the RI. In general, overall contaminant concentrations decreased markedly during this period, with some contaminants not being detected at all during the RI. MTBE, one of the original five primary contaminants, was not detected in the RI, and ethylbenzene was not detected in any groundwater samples. Additionally, the extent of contamination did not expand, but appeared to decrease.

This overall reduction in the extent of contamination is probably a result of two factors: (1) groundwater beneath the site moves very rapidly, which is consistent with the karst setting of the site. Three dye traces were conducted as part of the RI, and in two cases, dye injected near the suspected point of release was detected at North U Spring, approximately 1/4 mile from the point of injection in less than 3 weeks (Figure Number 3). (The third dye was not detected, probably due to masking by a previously injected dye.) North U Spring is a discharge point for the upper aquifer and (2) the primary contaminants are lighter than water, allowing them to "float." This probably enhanced their ability to be transported through the hydrologic system. These two factors probably worked to dilute contaminant levels below detection limits over much of the site.

A dramatic example of the reduction in the concentrations of groundwater contamination is the groundwater beneath the Curtis Service Station. In 1984, approximately one foot of petroleum was observed floating at the top of the water table beneath this property. However, during the RI, not only was free-floating petroleum absent, but dissolved BTEX compounds were present only in trace quantities. Moreover, BTEX compounds were detected in only the first of two sampling rounds during the RI. In addition, this property was the only location where BTEX compounds were detected in wells during the RI.

Another important change has been the greater rate of reduction of MTBE and ethylbenzene relative to the other primary contaminants. This is probably explained by the chemical properties of these two compounds. MTBE is much more soluble than the other primary contaminants (BTEX). Therefore, most or all MTBE has probably solubilized and subsequently left the site through the fast-moving hydrologic system. Ethylbenzene commonly degrades into other compounds, such as benzene and toluene. The amount of time elapsed since the release may have been sufficient to allow most or all ethylbenzene to break down into other compounds.

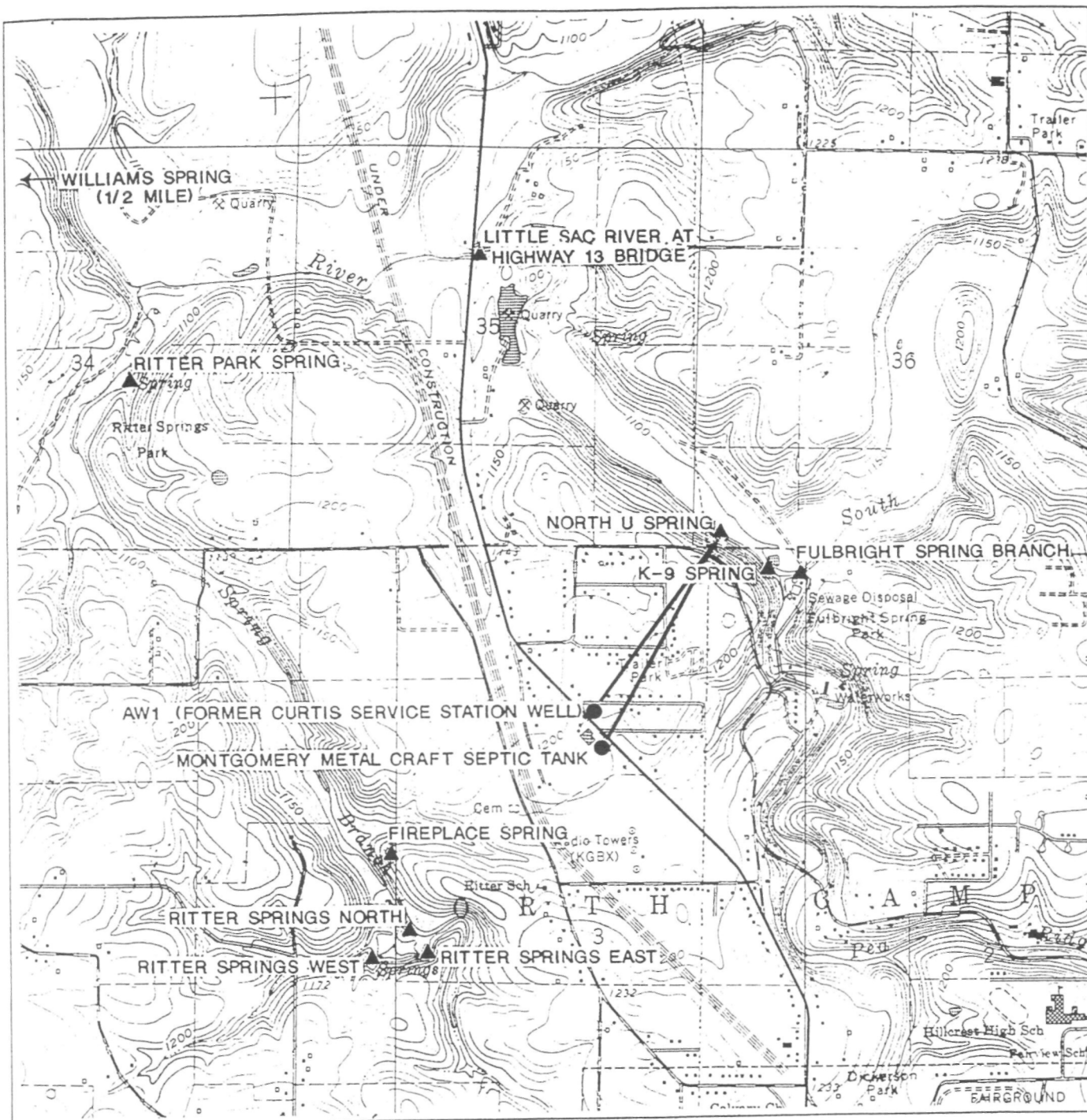
Metals were not included as contaminants of concern at the site at the time the site was listed on the NPL. During the RI, however, it became apparent that metals concentrations were elevated in some water samples.

The RI concluded that this was a natural phenomenon, for several reasons. First, no evidence exists to suggest a release of metals has occurred at the site, and the types of metals found are inconsistent with industrial/commercial activities at the site. Next, the metals were detected in total, not dissolved analyses. This suggested that metal-containing sediment suspended in the samples caused the elevated metal concentrations. Indeed, it was documented that the phenomenon was restricted to relatively turbid samples. Finally, metals in Greene County soils are generally present in sufficient concentrations to cause the observed phenomenon if entrained in a water sample. This is supported by the fact that the phenomenon is restricted to wells which are not in use. Wells which are not pumped accumulate sediment in the borehole and fractures around the well. When purged and sampled, the sediment is entrained, causing turbidity.

Non-petroleum organic contaminants generally were found only in isolated locations. Since the contaminants are not distributed in a pattern suggestive of a significant spill or plume, they probably represent small-scale spills or leaks. Many of these compounds are polycyclic aromatic hydrocarbons (PAHs). PAHs are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances. They can be manmade or occur naturally. PAHs may be found in the heavy, tarry fraction of petroleum products. It therefore is possible that the PAHs at the site are related to a petroleum release.

SECTION 6, SUMMARY OF SITE RISKS

Because CERCLA lacks authority for addressing releases of contaminants of concern at the North U Drive Well Contamination site, an assessment of site risks is not required. Nonetheless, a Risk Assessment was conducted to provide the public with information on potential health concerns, and for the use by



EXPLANATION

- ▲ DYE DETECTOR
- DYE INJECTION LOCATION
- ← GROUNDWATER FLOW DIRECTION

NOTE:

DYE INJECTION CONDUCTED BY MISSOURI DGLS



NORTH U DRIVE SPRINGFIELD, MISSOURI

Prepared by Mark Mayo
Ecology & Environment, Inc.
Source: USGS 7.5' Ebenezer, MO Quad. rev. 1976

Figure 3, Dye Injection and Dye Detector Locations

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any other agencies which may have regulatory authority over the site. The Risk Assessment considered only manmade contaminants, and did not assess risks associated with naturally occurring metals.

6.1 Definition of the Reasonable Maximum Exposure (RME)

Information and data indicate that the site currently does not pose any potentially significant threat to the environment. The baseline risk assessment therefore focused on the carcinogenic and noncarcinogenic risk to human health, which could result from both current and future land uses and exposures at the site.

Pursuant to the National Contingency Plan, 40 C.F.R., Part 300, in evaluating risks at the site, the potential health risk for a reasonable maximum exposed individual (RME) was used. RME exposures are used to determine if remedial actions are required at sites where CERCLA authority exists. RME exposures generally include not only current exposures given existing land uses, but also exposures which might reasonably be predicted based upon expected or logical future land uses.

The RME for this site assumes certain exposures which may not currently exist. MDNR and EPA believes it is reasonable to expect such exposures.

MDNR and EPA identified two likely current and future RME scenarios, residential and industrial/commercial. This is consistent with the current makeup of the site. Because land use is not likely to change in the future, they are also considered appropriate for future exposure scenarios. Contaminant concentrations were assumed to remain constant overtime. This may be a conservative assumption, however, because BTEX contaminant levels in the shallow aquifer have dropped dramatically since the time of the original release, and may drop further.

The residential scenario assumes an adult lives on the site 365 days per year over a 30 year period, ingesting groundwater, incidentally ingesting contaminated soil, and directly contacting contaminated soil. The occupational scenario consists of an adult employee working on the Montgomery Metal Craft property 250 days per year over a 25 year period. The adult employee incidentally ingests and directly contacts contaminated soil on the Montgomery Metal Craft property at the site.

Excessively turbid water samples were not considered in the Risk Assessment. As indicated previously, turbidity was caused by entrained natural sediments, which in turn contained metals in sufficient concentrations to cause the observed levels. Water containing excessive turbidity is generally aesthetically unacceptable for drinking. Public surface water supplies can have no more than 1.0 nephelometric turbidity units (NTU), because excessive turbidity can mask the presence of bacteria. 10 NTU was selected as a criterion of the suitability of well water or ground water at this site for drinking. Therefore, samples with turbidity exceeding 10 NTU were not considered in the Risk Assessment. It should be noted that none of the wells exhibiting excessive turbidity were in current use as a water source. In soil samples, only metals present in concentrations above background concentrations for Greene County were considered in the Risk Assessment.

6.2 Noncarcinogenic Risks for the RME

The Total Hazard Index for the residential and industrial/commercial exposure scenarios are 1.0 and 0.013, respectively. Human health risks may exist if the Total Hazard Index exceeds 1.0. Therefore, health risks for noncarcinogenic contaminants at the site are considered unlikely.

6.3 Carcinogenic Risk for the RME

The Excess Lifetime Cancer Risk for the residential exposure scenario is 7.3 in 1,000,000 in the RME's lifetime risk of cancer. The Excess Lifetime Cancer Risk for the occupational exposure scenario is 9.5 in 10,000,000. Both are well below the level (carcinogenic risk of one in ten thousand) at which the National Contingency Plan suggests that remedial actions under Superfund are warranted.

6.4 Environmental Risk

Past releases of contaminants at this site do not appear to present a current or future threat to the environment. Throughout the history of this site, the only significant contamination was found in the groundwater. Further, concentrations of contaminants in groundwater dropped dramatically between the time of site discovery and the RI, implying that natural processes are aiding the attenuation of contaminant levels.

SECTION 7, STATUTORY AUTHORITY FINDING

Under Section 104 of CERCLA, Superfund response authority is dependent upon a release, or potential release, of a hazardous substance, pollutant, or contaminant.

The term "hazardous substances" is defined under CERCLA Section 101(14) to include 714 toxic substances listed under CERCLA and four other environmental statutes. The definition of a hazardous substance excludes "petroleum, including crude oil or any fraction thereof," unless specifically listed under one of the five statutes. Furthermore, as defined by case law, hazardous substances normally found in refined petroleum fractions are excluded from CERCLA response actions. Hazardous substances found at levels which exceed those normally found in such petroleum fractions, as well as substances not normally found in petroleum products, are not excluded from CERCLA response actions.

With respect to some of the elevated concentrations of metals in unfiltered groundwater samples, Section 104(a)(3)(A) of CERCLA does not allow for a response activity where there is a "release or threat of release of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found."

Therefore, as the result of the lack of jurisdiction to address petroleum-related contamination and natural substances under CERCLA, no further action will be taken under the Superfund Program to address the North U Drive Well Contamination site. Additionally, an assessment of site risks determined that, even if authority existed, no action would be required based on an absence of significant potential human health and environmental risk.